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MAN.

(Continued from page 167.)

OF THE HAIR. Every part of our frame deserves to be attentively considered and investigated. The hair, which is found in various form and quantity, over nearly the whole external surface, might seem at first view an excrescence hardly worthy of notice. We are soon struck, however, with the contrast between man and animals, in respect to this growth; with its general abundance over the whole body in the latter, and the comparative nakedness of the former; while in the head these proportions are reversed, and its copious and long growth, to which there is nothing parallel in animals, forms a distinguished and peculiar ornament, imparting a character of dignity and majesty to the human head. It presents, again, well-marked varieties in the different races of men: compare the short woolly knots on the head of the genuine Negro, or the coarse, straight and thin hair of an American or Mongolian, together with their beardless faces, to the ample growth of fine and undulated locks, and the full beard which so gracefully adorn the head and face of the Caucasian races. The physiologist will be interested in examining the relation between the hair and the integuments; and in noticing the sexual distinctions which are more or less strongly marked by this production.

Each individual hair, apparently, is composed of a liquid substance, secreted in the *cutis vera*, or inner skin, proceed-

ing through the pores of the *cuticula*, or outer skin, exhaled by the heat of the body to the surface, and thus condensed in passing through the pores, it then becomes hair; and each hair, when properly supplied with this nourishment, is extremely firm in those pores.

The celebrated Albertus Magnus affirms, 'that the brain is divested of gross humor, choler or phlegm, which pass through the exterior flesh and becomes dry, and are converted into hair.'

That illustrious anatomist, Chesseldon, asserts, 'that each hair is nourished from *materia perspirabilis*.' Perspirable matter which forms the root, forms it in various shapes, some bulbous, and some very long and thick, exactly like the root of a tree, owing to the plenitude of nourishment it receives.

The perspirable matter issuing from the pores of the outer skin, becomes very hard and callous, and is formed into hair.

As soon as the moisture gets above the skin, it forms an oval, square or round; and according to the supply of nutriment, so it grows quickly to a prodigious length, or slowly and keeps short. Each hair has been generally understood to be hollow; but it is not entirely so, but consists of a number of fibres, which are distinctly seen with the microscope. Although its coat is callous, still it is so transparent, that these fibres may be distinctly seen. The external part of each hair, from root to point, is covered with a hard coat, resembling the bark of trees, with thorns projecting exactly like a briar; others exactly like a fish, covered with scales approximating to each other, and with a sharp point; some of these scales are more distant, and in an erect position: most of these hairs have lumps exactly like the warts that grow on trees, interspersed with medullary cells, or valves, all forming a beautiful appearance. Although each hair is covered with these different coats, still they are in many parts transparent. In the light, these scales, warts, briars, &c. all bear a different shade, which gives to each hair a beautiful silver or gold hue, which is often observed by the naked eye: for instance, the divine Milton expressed himself thus—

‘Half her breast
Naked met his under the flowing gold
Of her loose tresses hid.’

In fine, the whole of the hair when viewed through the microscopic glass, forms an elegant and interesting, as well as a most pleasing subject for the reflecting mind.

Thus nature in all her operations, even to the minute object

of a single hair—evinces the wisdom of the Great Architect of the universe.

‘Nature all o’er is consecrated ground,
Teeming with growth immortal and divine.’

The scales lay on each hair in a slanting direction, from root to point, which may be distinguished in the following manner :—

Take a single hair and grasp it by the root in one hand, and draw it through the fingers of the other from root to point, and no resistance will be felt; but pass it in the same manner from point to root, and a tumultuous resistance will be perceived, and a noise distinctly heard.

By the same experiment, the root from the point may be distinguished when the root happens to be cut off: and the coarser the hair is, the more perceptible is the friction.

The above observations will demonstrate, that the hair from the root upward is in some parts hollow, which give the tone which may be plainly perceived by the microscope. Some hairs are square and others round, which is anatomically accounted for from the size of the pores of the outer skin from which they issue; though some writers have affirmed that more hairs than one issue from each pore. But it has been demonstrated by the microscope, that when these hairs are found to have branches, it is through their wasting or decay; when that is the case, the hairs seldom have any root, but will comb off easy; when the root comes off with the hair, it is then evident that the pores are open. Therefore it appears to be according to the size of the pore that they are square or round.

The coarser hairs are square, and along the hairs both square and round, are dark lines, and upon more minutely examining them with the microscope, these lines appear to be fibres united with each other, throughout each hair. These observations are corroborated by Leuwenhoek, who observes—‘On examining hairs which have been recently plucked out, I have seen with the microscope several distinct small fibres, uniting and forming at the bottom of the hair; I have no doubt a great many more would have been perceptible, had they not been broken off. These fibres were transparent.’

The above remarks evidently show that the hair receives nourishment, and that hair which receives the most, has an additional brilliancy and strength.

It is well known that fear and terror cause the hair to *stand erect*. This is occasioned by the heat proceeding from the

outward part of the body to the heart ; the pores being shut, the hair assumes an erect position.

In the Book of Job, Eliphaz, in his description of a supernatural appearance, observes—‘ *Then a spirit passed before my face, the hair of my flesh stood up.*’

In the passion of anger, the manner in which the hair is affected, adds to its terrific appearance ; as finely delineated, in the following lines of the celebrated Scottish bard :—

‘ Fierce was her look, and stern her air,
Back from her shoulders streamed her hair ;
The locks that wont her brow to shade,
Stared up erectly from her head.’

The hair spreads according to the form of the skull and the position of the muscles, and it has a wonderful influence on the countenance. The celebrated physiognomist of Switzerland, Lavator, makes the following remarks on this subject :—‘ As is the hair, so the muscles ; as the muscles, so the nerves ; as the nerves, so the bones : their powers are mutual ; and the powers of the mind to act, suffer, receive, and give proportionate.’

The colorless Albino has a soft white hair. In the first, or white variety of the human species, every gradation from the fair to the dark is accompanied by correspondent alterations in the tint of the hair. This is true, not only of nations, but of individuals in the white races. A light complexion and thin skin are accompanied with delicate fair or red hair ; a dark one and thick skin with black hair, almost invariably, even in individuals of the same family ; a difference which, according to the philosophy of some writers, would be a sufficient ground for classing them in distinct species.

The four colored varieties of men have black hair, which is always stronger and coarser in texture than in the whites. This difference is particularly noticed by the Chinese, who contemptuously compare the hair of Europeans to the soft fur of the smaller animals. In Negroes, native Americans, and New Zealanders, the texture is much stronger than in the darkest Europeans. A striking proof that the color of the hair depends on that of the skin, is afforded by the spotted Africans, in whom the hairs growing out of a white patch on the head are white.

The principal differences of the hair may be brought under the following heads :—

BLACK OR DARK BROWN HAIR. The color of the hair depends principally on the quality of the nourishment. Black or dark brown hair, is caused by a redundancy of nutriment.

The choleric phlegm, or ebullition of humidity, with which it is fed, being of a cold nature, and the pores open and moist, therefore the hair acquires great strength.

The ancient Britons had principally black and dark brown hair. The hair of the females grew to an immense length : their skin was peculiarly fair. Indeed, even to this day, a lady with long black hair, and a fair skin, is termed an *old English beauty*, alluding to the aboriginal British females.

The Chinese ladies have hair as black as jet, fastened in a knot at the crown of the head, and decorated with a variety of artificial flowers.

The natives of Macassar in the East Indies, have long black hair and curly, which is occasioned by the attention they pay to it, applying oil to it from infancy.

The black hair of some of the Indian tribes grows to a prodigious length ; and is so strong that it has exactly the consistency of horse hair ; but square, and not in the least inclined to curl. Barrington, in his description of the natives of New South Wales, informs us, 'that their hair is short, strong and curly ; and as they have no method of combing or cleaning it, it is always filthy and matted ; the men's beards are short and curly like the hair of their heads.'

The inhabitants of the island of Pugniatan, in the East Indies, have very long hair, black and straight, and the women have no eye-brows.

The women of Java are of a light brown complexion ; their features regular, and their hair very long. The Malays of Malacca have long black and shining hair, which changes to gray at an early period ; and the inhabitants of Mexico and Peru have very long black hair. The women of Circassia, so famed for their beauty, for their exquisitely fine features, and the inimitable fairness of their skin, white as snow, have hair of an incomparable elegant black hue.

Black hair has ever been held in the highest estimation. In the Song of Solomon we find black hair peculiarly specified as beautiful—‘*His head is of the most fine gold, his locks are bushy, and black as a raven.*’

In the popular ballad of Cymon and Iphigenia, we find the following passage :—

‘*Thy jetty locks that careless break
In wanton ringlets down thy neck,
Become thy smiling mien.*’

Black hair characterized the prophetic virgins of the Druids.

‘*Her sable hair its ringlets spread,
Convolved like snakes around.*’

Numerous passages are to be found in the works of Oriental and European writers, illustrative of the beauty of black hair.

Mary, queen of Scots, was pre-eminent for her beauty. Dr. Robertson thus describes her hair—‘ Her hair was black, though according to the fashion of that age, she frequently wore borrowed locks, and of different colors.’

FLAXEN HAIR. Fine flaxen hair is produced from a different nutriment to dark hair; and of which there is not so large a quantity. The skin is fine, and the pores closer; consequently the hair becomes fine and transparent; it is also square, which is evidently the reason of the flaxen and light brown possessing the additional lustre and brilliant shades, far superior to other hair. Persons that have flaxen hair, are frequently in England relaxed and enervated, and sometimes of small stature.

Beautiful flaxen hair has ever attracted admiration. Among the Anglo-Saxons and Danes, the unmarried females had their flaxen tresses flowing in ringlets on their shoulders.

Some persons retain flaxen hair to old age, especially if they have not been ruffled by corroding cares, trouble and affliction; anxiety, and whatever preys upon the mind, operates strongly on animal secretion, which greatly affects the hair. Young persons having flaxen hair, and experiencing vexation and disappointments, have had it changed in a short time.

The North Britons have generally fair hair; at the same time possessing strong constitutions.

The Akansans of North America have fine fair hair. They are denominated ‘ the handsome men—strong and robust.’

The inhabitants of Formosa, near China, have fair and beautiful hair.

‘With dimpled cheek, and eye so fair,
Through his thick curls of flaxen hair.’

The Albineses, from the Glaciers, in Switzerland, who were exhibited in England a few years ago, displayed uncommon beautiful hair, which was flaxen, peculiarly soft, and so long as to reach to their heels. Their eyes were red as crimson, and their skin was extremely delicate.

The Swedes and Germans have fair hair, and are a strong race of men; and also some of the Russians.

RED HAIR. Red hair is produced from a strong phlegmatical nutriment; and persons that possess it, are of a sanguine disposition, and are generally strong and healthy. This hair is very coarse and square, and is angular; and the scales before mentioned, being more predominant than on other hair, gives an additional splendor to the shades.

Red hair in general flows very thick, and is uncommonly strong. Heat has a great power over it; more especially the burning rays of the sun. Persons of fair complexion, and light brown hair, by travelling in climates where the sun has great power, have their hair changed to red. Rowland mentions a gentleman who went to Sumatra, and resided there for some time: when he returned to England, his friends were astonished to perceive his hair totally changed to red, it being of a different color prior to his voyage. The inhabitants of Sumatra have jet black hair. The change of the hair of the person adverted to must have arisen from the heat of the sun.

In Tripoli and Turkey, the ladies so greatly esteem red hair, that they even paint the hair of their children of a vermilion color.

Red hair was first discovered in Africa and Asia. It was prevalent among the ancients. It was not known in England until after the Saxons and Danes had respectively invaded it: but red hair was known in France, but viewed at that period as rather a singular circumstance. The second son of William, Duke of Normandy, who conquered England at the battle of Hastings, who succeeded to the crown on the death of his father, was surnamed *Rufus*, or red hair.

Red hair has been almost universally given to warriors, and golden tresses to ladies. In Heathen Mythology, the golden locks of Apollo—the red hair and beard of Mars—the yellow-tresses of Venus—and the flaxen braids that were twisted under the helmet of Minerva, demonstrated how much the color of this hair was appreciated by the ancients.

When the hair assumes a light red hue, it is termed an auburn; and when the nutriment acts upon it properly, its gloss and shades are brilliant.

The color of the hair is often changed by the extreme heat of the sun, and by travelling in hot weather.

CURLY HAIR. Curly hair proceeds sometimes from a superabundance of heat, and frequently appertains to persons of a lively disposition, or disposed to the least irritability of temper; consequently the secretion is more braced, and the pores close; the effect of which is, that the hair becomes curly. There is a variation, however, in some instances: many persons of great strength have thick, curly hair: the secretion is more of an oily nature, which proves that when the fluid becomes dry, the curl loses its strength, and that too often irretrievably.

It happens sometimes that persons bathing in a cold bath,

upon coming out of the water, find their hair frequently *curl*, which is an evident proof, that any strengthening substance, even water, gives new vigor to the hair.

Many of the Indians have curly hair, and they are of a robust constitution: their employment being hunting, requires exercise of great activity.

The hair of the inhabitants of the Duke of York's Island, in the Pacific Ocean, is so curly, that they make use of various methods to make it straight.

Black and crisp, so as generally to be called woolly, is common to all the Negro tribes. This is either formed into small and short masses, or it may admit of being combed to the length of three or four inches, still forming a kind of general woolly fleece.

The analogy on which the hairy covering of the Africans has been called wool, is quite a loose one, and goes no further than a slight resemblance in appearance. The filament of wool is rough on the surface; in hair it is smooth. The latter is of a uniform thickness throughout, or rather slenderer towards the point, while the former is unequal in size, and larger towards its end. The thicker part is said to be produced in the summer; the thinner in the winter months. In a variety of experiments made by Dr. Anderson, he always found that the growing part of the fibre of wool varied in thickness with the temperature of the season; being thickest in summer, smaller in spring and autumn, and smallest of all in the winter. Another distinction of wool is, that it falls off altogether in a mass; while human hairs always drop off singly, and from time to time.

The natives of New Holland have short black and curly hair.

The women of Mingrelia have beautiful curly hair, flowing in ringlets in all directions. These women are very handsome, and some of them display these curls in a tasteful manner, which renders their appearance truly elegant.

We have before observed, that persons possessing curly hair are generally of a strong constitution, and corporeal powers—and we might add, that history furnishes us with many instances of men having this kind of hair, who have been eminent for the strength of their *mental powers*. Such was Brutus among the ancients; and instances of this kind are now found in modern times of handsome men with light curly hair, as well as dark, possessing great talent and abilities.

‘Fresh are his ruddy cheeks, his forehead fair,
And like the burnished gold, his curling hair.’

LONG HAIR. The length of the hair is greatly increased by the abundance of the choler, phlegmatic matter with which it is continually supplied, and causes it to augment to a great degree ; there is more of this matter predominant in women than in men. Long hair gives to the female a beautiful, mild and benign countenance : it is a distinguished ornament of the human frame, and a great addition to the features. Some of the most illustrious poets have eulogized length of hair :—

‘A silent, gentle tear let fall from either eye,
And wiped them with her hair.’

—‘And now with streaming locks
That half embraced her in a humid veil.’

It is evident that Mary Magdalene, who washed our Saviour’s feet with her tears, and wiped them with the ‘*hairs of her head*,’ had long hair.

Godiva, the wife of Leofric, Duke of Mercia, had such an immense quantity of hair as to cover her body, which was exemplified when she rode through Coventry, with no other covering than her hair.

White mentions an Italian lady, in whom the hair trailed to the ground when she stood upright : the same observation may be made of the Greek women. A Prussian soldier had it long enough to reach the ground.

About forty years ago, a woman was exhibited at different fairs in England, for the length and strength of her hair, which she would wind round a blacksmith’s anvil, weighing about two hundred pounds, and lift it with ease from the ground.

Absalom was peculiarly remarkable in respect to the immense quantity and the beauty of his hair. This, added to his courteous manners, appears to have gained him many partisans in his unnatural rebellion against his father.* His hair, when polled or cut every year, weighed two hundred shekels, or thirty-one ounces.

GRAY HAIR. Gray hair is a disease of the hair, and is caused by the putrefaction of the natural moisture ; consequently it becomes white. The natural moisture exhaling to the surface, but still of a different kind, the white hair receives its nourishment, which is the cause of its growing. It is of some

* About forty years since, a tonser, in Grub-street, London, had a sign at his shop window of Absalom suspended from a tree, whose branches caught his hair, under which were the following lines :—

‘O ! Absalom, my son, my son,
If thou hadst worn a periwig, thou wouldst not been undone.’

magnitude, but deficient in those scales and lumps before mentioned, and it is more erect than other hair.

The cause of this putrefaction taking place is in consequence of illness, violent fevers, accouchments, excessive grief, great anxiety, intense thinking, close attention to study, violent exercise, and anything which tends to injure the natural moisture of the body. The head always receives the injury first, and particularly those parts which lie nearest the brain, which is evident by the hair changing to gray on the crown of the head first, about the temples or the front of the head, or some particular part towards the brain.

The hair of many persons changes at an early period of life, which must arise from some cause, perhaps imperceptible to the person; the effects of sudden fright, fear, anxiety, and other causes, will change it even in an hour.

Mr. Thompson, a gentleman resident near Wigton, Cumberland, England, relates that his son was at school near the sea-side. The boys were accustomed in their play hours, to ramble to the rocks, to take the eagle's nest. One day, calling to see his son, the teacher went in search of him, it being the hours of play, and at that moment he perceived him let down the rocks by a rope, with a sabre in his hand, the glittering of which prevents the eagle's approach. The boy observed the bird of Jove flying towards him, and in flourishing the sabre, he cut the cord by which he was suspended, all but one thread. Had the rope been wholly cut, he would have been precipitated an immense depth, and must inevitably have been dashed to pieces. In this terrific situation, the utmost care was taken to draw him up, resting on the single thread, and he was taken away *almost lifeless through fear*, and conveyed home. Upon his recovery from the stupor occasioned by the fright, to the great astonishment of his father and all who knew him, the whole mass of his hair, which was black, was changed to white!

The unfortunate queen of France, whose barbarous sufferings are scarcely to be paralleled in the annals of history, during her confinement in the prison of the Conciergerie, had her beautiful tresses changed to gray, before she was sacrificed to the fury of the rulers of France.

The foregoing division is sufficient as a general one; but there are some exceptions to it.

The animal kingdom furnishes us with numerous parallel varieties in the color and texture of the hair; as, for example, in the black sheep, in the black and white horses, in the various hues of cattle; in the white, black, brown, or spotted

rabbits; all undoubtedly produced from the original gray stock.

Sheep exhibit every kind of covering, from the soft and delicate fleeces of Thibet and Spain, to the coarse and rough hair, which takes the place of wool in very warm countries. There is a mixture of hair with the wool in the argali, the supposed wild original of our flocks. The sheep of some of the Tartar tribes have a similar mixture; and the same thing will occur in this country where the breed is neglected. In these cases, if the animals with the best fleeces are selected to breed from, and this rule be observed constantly, the wool would be gradually improved, and the hairs disappear; or *vice versa*, the sheep would become entirely hairy.

Goats, rabbits and cats in Angora, a small district of Asia Minor, are remarkable for the length and softness, as well as snowy whiteness of their coverings.

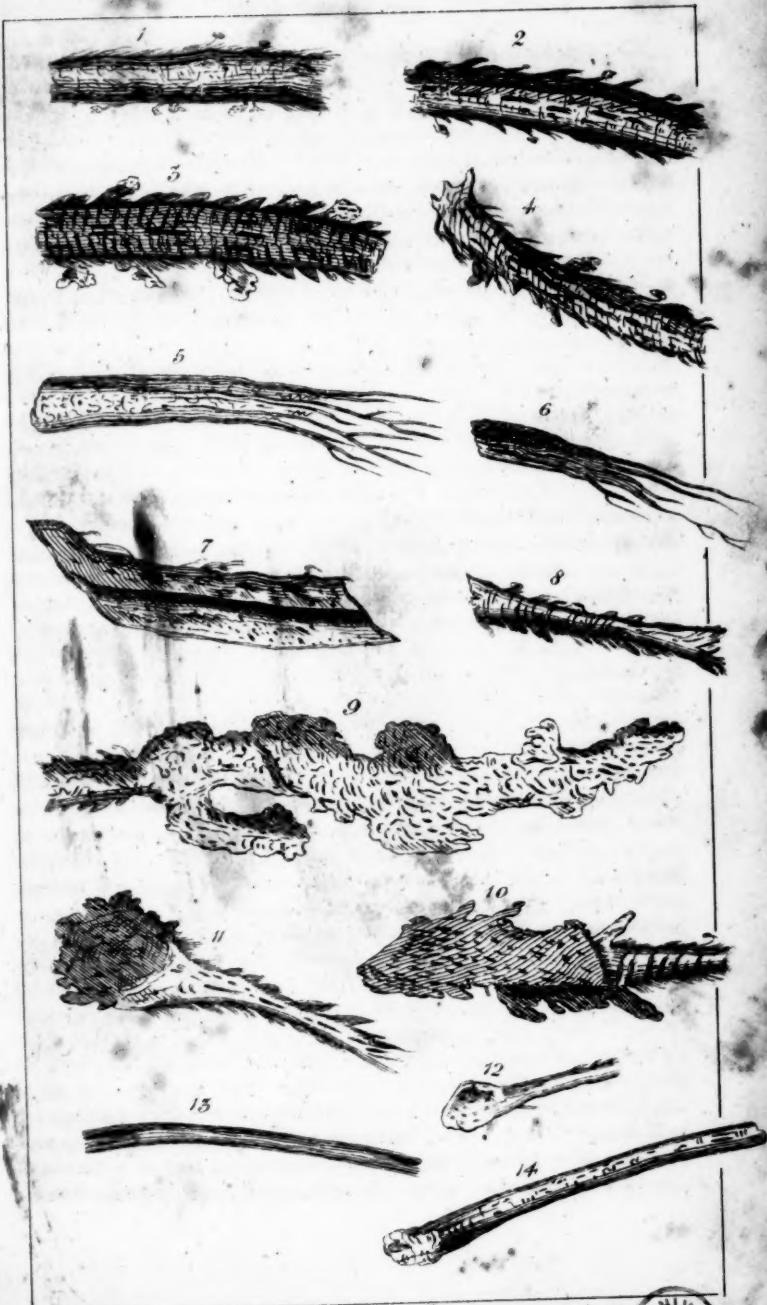
If these goats, and those furnishing the material from which the precious shawls of Cashmere are fabricated, are of the same species with our domestic animal, and with the wild goats considered as its original stock, the variation far exceeds what we observe in the hair of the various human races; and this, together with the examples of the dog and sheep, will prove to us that a difference in the hair is not a sufficient ground for establishing a distinction of species.

The various races of mankind exhibit considerable differences in the beard, as well as in that of the hair. One of the most general characters of the dark colored nations, at least of those which belong to Mongolian, American, and African varieties, is either an entire want of beard, or a very thin one developed at a more advanced age than is usual with us: on the contrary, a copious beard has always been the pride of the white races; and, from its being a distinguishing attribute of the male, has been commonly regarded as a mark of masculine strength. Dark colored nations with strong beards are as uncommon as individuals of the white races with an inconsiderable growth of this covering. A general smoothness of the whole body is combined with the diminution of the beard; and these characters are rendered more striking by the very common practice among the dark colored nations of carefully eradicating or destroying the hair; which affords another example of their great disposition to exaggerate by artificial means whatever may be deemed imperfect or defective in their bodily formation. In some instances, neither the eyebrows nor the eyelashes are spared; nor even the hair of their head.

The annexed plate is an exact representation of the human hair, as viewed through the Solar Microscope, from minute observation.

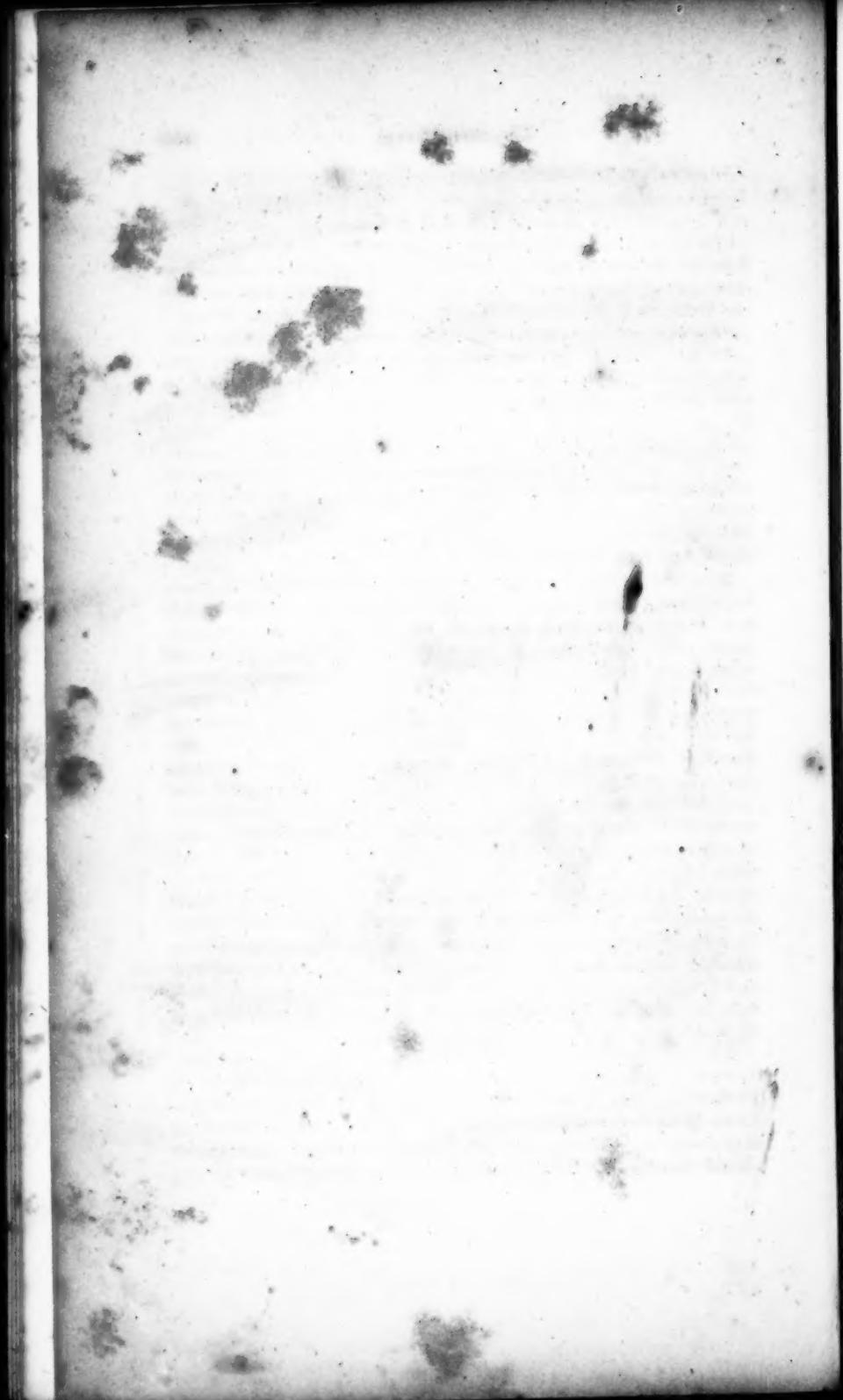
EXPLANATION.

- No. 1. A representation of a piece of hair where the hair was of great length and full growth, exhibiting lumps, or warts, and different marks on the coat, the whole appearing transparent.
- No. 2. A piece of stout hair in its full growth, exhibiting different marks, warts and scales, more plain.
- No. 3. Another piece of stout hair, exhibiting the coat more perfect, with the warts ;—also the scales on laminæ projecting from the coat, laying in a slanting direction from point to point.
- No. 4. The same as No. 3, but smaller.
- No. 5. Represents the hair splitting and wasting at the point, for want of cutting.
- No. 6. Hair cut, as after a fever or in a consumption, becomes dry and split, almost from the root.
- No. 7. A piece of hair cut with a knife.
- No. 8. Represents a hair broken, and displaying the different fibres.
- No. 9. Is the long root of a hair so deeply seated in the skin as to occasion great resistance and pain in plucking it from the skin, exhibiting its exact form.
- No. 10. Another root plucked with considerable pain, with a piece of the cuticle, or outer skin adhering to it.
- No. 11. Shorter root, from a person of a dry constitution, which is easily extracted.
- No. 12. A hair, with a white pulp or bag at the end, which comes with the hair when falling off.
- No. 13. Piece of an infant's hair deficient in scales, or lumps, the hair not come to perfection, but quite transparent.
- No. 14. The hair at the age of twelve or fourteen, where the marks and scales begin to appear, with a small root.



Pendleton's Lithog. Boston.





THE STRAWBERRY.

NATURAL ORDER—*Rosaceæ*, resembling the rose in flowers and medicinal properties, being refrigerant, tonic and astringent. **CLASS**—*Icosandria*, having twenty or more stamens inserted on the calyx. **ORDER**—*Polygynia*, having many pistils. **GENUS**—*Fragaria*, comprising strawberries. Calyx inferior, 10-cleft; 5 alternate divisions smaller: coroll 5-petalled; receptacle ovate, berry-like: acines naked, immersed in the receptacle, caducous.

No vegetable production of the colder latitudes, or which can be ripened in those latitudes without the assistance of artificial heat, is at all comparable with the strawberry in point of flavor; and, if the soil and situation be properly adapted to it, the more cold the climate, indeed, the more bleak and elevated, the more delicious is the fruit.

To contemplate its relations to the other parts of nature—to the sun which expands its blossoms—to the winds which sow its seeds over and over—to the brooks whose banks it forms and embellishes;—to contemplate how it is preserved in winter, during a cold capable of cleaving stones asunder, and how it appears verdant in the spring without any pains employed to preserve it from the frost—how, feeble, and trailing along the ground, it should be able to find its way from the deepest valleys to the summit of the Alps—to traverse the globe from north to south, from mountain to mountain, forming on its passage a thousand pieces of chequered work, of its fair flowers and rose colored fruit, with the plants of every other climate—how it has been able to scatter itself from the mountains of Cashmere to Archangel, and from Norway to Kamtschatka—how, in a word, we find it in equal abundance in the continent of America, from the bleak fields of Labrador, even to the Terra del Fuego, though an infinite number of animals are making incessant and universal war upon it, yet no gardener is at the trouble to sow it again—fills the mind of the real lover of nature with wonder and admiration.

The derivation of the name *strawberry*, is rather obscure; it is, however, of very ancient date. The Latins named it *Fragaria*, from its fragrance; some others say that it is derived from *fragans*, to break, from its supposed efficacy of dissolving or breaking the stone in the bladder. It was also called *Morum terrestre*, from the great resemblance of the

fruit to that of the mulberry. Our English name, strawberry, we find applied to it by the oldest English writers, with scarcely any other synomime ; and it is conjectured by the late Sir Joseph Banks, to have originated from the practice of laying or placing straw under the plants to protect the fruit from being spoiled by mud in times of rain, or when watered artificially. The ingenious author of *Pomarium Britannicum* traces the origin of the name to a still more remote date. 'We are of opinion,' says he, 'that it had this appellation prior to its being cultivated in our gardens, and that the name of strawberry originated from the old practice of threading these berries on straws of grass, in which shape they were brought from the woods. It is still practised by children in many country places where the wild strawberry abounds, who offer the fruit at so many straws of berries for a penny.'

The ancients appear to have disregarded the strawberry as a fruit-bearing plant. Virgil, Ovid and Pliny speak of it so slightly, and although the latter particularly mentions the bramble-berry, still he nowhere notices the strawberry as an article of diet, luxury or medicine. It was in some repute in England in the time of Tusser, who in his quaint way makes the farmer say :—

‘Wife, into the garden, and set me a plot
With strawberry roots, the best to be got.’

And the immortal bard, Shakspeare, takes notice of them in Henry V. ; and in one of his dramatic poems says :—

‘My Lord of Ely, when I was last in Holborn
I saw good strawberries in your garden there.’

Evidently alluding to the garden of the Bishop of Ely, who had a palace and garden near about where Ely-place, Holburn, now stands.

The strawberry is one of our earliest fruits, and as the harbinger of the *fructus horae*, its appearance is as welcome as its flavor is agreeable.

The gathering of strawberries in the fields is among the rural enjoyments of children, which are, in after life, recollected with pleasure, not unfrequently mingled with melancholy reflections, upon the contrast of that happy season with the sorrows with which maturer years are shaded.

‘The strawberry blooms upon its lowly bed,
Plant of my native soil! The lime may fling
More potent fragrance on the zephyr’s wing;
The milky cocoa richer juices shed,

And white guava lovelier blossoms spread ;
 But not, like thee, to fond remembrance bring
 The vanished hours of life's enchanting spring,
 Short calendar of joys forever fled !
 Thou bidst the scenes of childhood rise to view,
 The wild wood path which fancy loves to trace,
 Where, veiled in leaves, thy fruit of rosy hue
 Lurked on its pliant stem with modest grace.
 But, ah ! when thought would later years renew,
 Alas ! successive sorrows crowd the space !'

As a dietetic fruit, the strawberry affords but little nourishment ; the moderate or even plentiful use of it is salubrious, and recommended to those of inflammatory or bilious habits. Boerhaave considers the continued use of this fruit as one of the principal remedies in cases of obstruction and viscidity, and in putrid disorders. Hoffman furnishes instances of some obstinate diseases being cured by strawberries and other mild, sweet subacid fruits. Strawberries should be taken sparingly by those of a cold, inactive disposition, where the vessels are lax, the circulation languid, or digestion weak.

This fruit is generally used as a dessert in its natural state, although often with cream and sugar ; but it is more esteemed when Burgundy or claret wine is substituted for the cream. Strawberry jam is much admired ; and for ice creams the flavor is generally preferred to that of raspberries.

Loudon, in the *Hortus Britannicus*, enumerates fourteen species of strawberries growing in England, all of which will flourish equally as well in this country. The following table exhibits their names and descriptions :—

SPECIFIC NAMES.		Time of Flowering.	Color of Petals.	Native Place.
Edible	<i>Vesca</i>	April, May	White	Britain woods
Large-calyxed	<i>Calyicina</i>	April, June	do.	France
One-leaved	<i>Monophylla</i>	May, June	do.	do.
Hill Green Pine	<i>Collina</i>	April, Nov.	do.	Germany
Majaufe de Champ.	<i>Majaufea</i>	April, May	do.	France
Bresling	<i>Breslingia</i>	April, June	do.	do.
Plane-like	<i>Platanoides</i>	do.	do.	North America
Taller	<i>Elatior</i>	April, May	Red	Britain woods
Canada	<i>Canadensis</i>	do.	White	North America
Scarlet Virginia	<i>Virginiana</i>	do.	do.	do.
Pine Great-Flowered	<i>Grandiflora</i>	do.	do.	Surinam
Chili	<i>Chilensis</i>	May, June	do.	South America
Buenos Ayres	<i>Bonariensis</i>	April, June	Apetal.	Buenos Ayres
Yellow Indian	<i>Indica</i>	May, Oct.	Yellow	India

All the above named species are of perennial duration, and may be propagated by roots and seeds. They all flourish best on a rich loam except the Edible, which requires a sandy loam, and the Yellow Indian, a sandy peat.

We now annex a list of thirty varieties cultivated in the Linnæan Botanic Garden, New York, from the pen of the proprietor, Mr. William Prince.

1. *Scarlet Virginian*—a native of our woods; fruit high flavored, and ripens very early; it is the parent of all the strawberries of that class denominated *scarlets*, of which forty-three varieties are known.

2. *English red wood*, sometimes erroneously called *red hautbois*, although it is smaller in size and inferior in flavor; it is, however, one of our most productive varieties, and not apt to have a superabundance of male flowers; and as the fruit does not at all come to maturity at one time, but continues to ripen gradually for a considerable period, it is a very useful family strawberry.

3. *English white wood*, sometimes erroneously called *white hautbois*; this has precisely the same qualities as No. 2, except in point of color.

4. *English red hautbois*—musk flavored, very fine, and nearly twice the size of No. 2. This variety is apt to be overrun with male plants, in which case new beds ought to be made when in fruit, in making which they should be planted in the proportion of ten fruit-bearing, or female plants, to one barren, or male one; and beds thus formed will produce so abundantly as amply to compensate for the labor bestowed. If preferred, the plants can be carefully marked when in fruit, and be transplanted afterwards.

5. *Hudson's Bay*—a hardy northern variety, with fine flavored scarlet fruit.

6. *Red Chili*—a conical shaped fruit, with a neck between it and the hull, from which it is consequently detached with ease. It is exceedingly productive, and is raised in great quantities for the market of New York; it is inferior, however, in flavor to the roseberry, hautbois, Lima and many others.

7. *Blush or greenish Chili*—this is called in England *white Chili*, and was imported by me from there under that name; as that name is, however, very inappropriate, I have changed it. It produces fruit more flat shaped than any other I have seen, which is always of a greenish and immature appearance on one side, even when perfectly ripe, and of a light red on the other. It possesses a high musky flavor, the taste being somewhat peculiar, and by some at first considered disagreeable. It ripens late, produces well, and quickly covers a large space of ground with its numerous runners.

8. *Bourbon blush*—a pale red fruit, less productive than many others, but of fine flavor.

9. *Pine apple or Carolina*—this is another native of our country, and is the parent of nineteen known varieties, among which are Keen's imperial, Keen's large seedling, and many others of the largest size. It is distinguished by its large and vigorous foliage, and fine flavored fruit, but is subject, like No. 4, to be overrun with male plants; but by pursuing the same course, this may be successfully surmounted.

10. *Carolina*, a seedling of No. 6—of good size, but less productive.

11. *Red Alpine, monthly or ever bearing*. It is no uncommon thing to gather fruit of this kind, when the autumn is mild, in the open air, at Christmas. In size and flavor it is similar to No. 2; produces fruit throughout the season.

12. *White Alpine*—possessing the same properties as No. 11, except as respects color. It is considered best to make new beds of the Alpine varieties every year.

13. *Keen's large*—much celebrated, foliage and runners vigorous, fruit large size and fine.

14. *Keen's imperial*—one of the largest and most noted English varieties, fruit fine flavored, and well worthy of cultivation.

15. *Roseberry*, already described; none superior as a market strawberry.

16. *Black*—a black red fruit of good flavor.

17. *Bath scarlet*—a fine variety; fruit of good size and well flavored.

18. *New hautbois*, also called *black hautbois*; fruit of the largest size of this class, fine musk flavor; when full ripe, of a very dark or blackish red. It is exceedingly productive, and I consider it one of the most valuable kinds.

19. *Downton*—highly esteemed; fruit large, and of good flavor, the foliage very large and vigorous; it produces well.

20. *Knight's No. 14*, called also the *narrow-leaved scarlet*—this is one of the fine varieties of No. 1; fruit large and of fine flavor.

21. *Bostock*—a variety of the pine class. It has been known by no less than sixteen names in England, which is of itself a strong proof of the estimation in which it has been held.

22. *Montreuil*,

23. *Raspberry flavored*, } favorite French varieties.

24. *Bush Alpine, or monthly*—this is exactly similar to No. 11, with the exception of its having no runners—a

circumstance to which some amateurs are particularly partial.

25. *French hautbois*—this much resembles No. 18, except that the fruit seems not quite as large; but it is one of the greatest bearers I have ever seen.

26. *Large Lima*—this is one of the very largest and finest flavored kinds I have ever seen; the fruit is of a long conical form, and is very high flavored. I consider this one of the very best for a family garden, and perhaps it may prove equally so to cultivate as a market strawberry.

27. *Early Hudson*—fruit round, of a pale red color, ripens about ten days earlier than the red Chili, and forms, with that, the principal bulk of this fruit sold in the New York market.

28. *Wilmot's superb*—the largest strawberry known.

29. *Bishop's orange*—next in size to No. 28.

30. *Grove end scarlet*—good bearers and fine flavor.

CULTURE OF THE STRAWBERRY.

(By *Gen. H. A. S. Dearborn—N. E. Farmer.*)

Between the first and tenth of October, 1827, I set out twenty rows, one hundred feet in length, of the following kinds. Four of the Chili, eight of the pine apple, two of the roseberry, and six of the scarlet. The ground had been cultivated for several years, with various garden vegetables. It is a sandy loam, and had been annually highly manured. It was ploughed, harrowed, and raked level. The runners were placed one foot apart in rows two feet asunder. Before the ground froze they were covered with litter, to protect them during the winter. In the spring of 1828 manure was spread between the rows, spaded in, and the ground raked level. During the summer they were often weeded, hoed, raked, and the runners as they appeared carefully laid lengthwise of the rows, so that in the autumn the intervals were completely filled up with plants, which were covered with litter, as in the preceding autumn. This spring (1829) manure was again spread and dug in between the rows, the weeds eradicated, and the ground often hoed and raked until the fruit began to ripen.

The Chili plants, which are more tender than any other strawberry I have cultivated, suffered partially from the unusual severity of the winter.

The roseberry first bloomed and a few ripe berries were picked on the fifth of June; the pine apple was but a few days later, while the scarlet was four or five. On the four-

teenth of June, twenty-six boxes of the pine apple strawberries were gathered, and four of the roseberry. On the seventeenth, thirteen boxes of the pine apple, on the eighteenth nine, and and on the nineteenth eight; after this it was neglected to notice the quantity, but there were at least fourteen boxes more picked, making seventy boxes, or nearly nine quarts to each row of the pine apple.*

I have cultivated many varieties of the strawberry, and am entirely satisfied that the pine apple has a decided preference. It is very prolific, the fruit large, beautiful, sufficiently high flavored and aromatic, but not quite so rich, or possessing the fragrance of the Chili or roseberry. But the Chili is a shy bearer, and but a small portion of the blossoms of the roseberry produce fruit; still it may be called a prolific and most valuable kind. The Chili claims attention from its size,—as I have raised them four inches in circumference,—but more especially for its powerful *aroma*, delicious flavor, and being later than the others. The scarlet is very prolific, but inferior in size, flavor and perfume to the other three kinds; still worthy of extensive cultivation as it continues longer to produce fruit than the pine apple or roseberry, if the season is wet.

For the roseberry and pine apple I am indebted to John Lowell, Esq. to whom we are all under the greatest obligations, not only for numerous additions to the products of our gardens, fields and orchards, but for a fund of interesting and valuable intelligence, which he so liberally disseminates, on all the branches of agriculture and gardening.

The most celebrated writers in Great Britain recommend planting the runners in beds, three feet apart, with three rows in each, two feet apart, and the plants eighteen inches asunder; and if the mode I have practised should be adopted, I recommend that the rows be three feet apart; for if the ground is made rich, and well tilled, the plants grow so luxuriantly as to require more room than two feet between the rows, to cultivate them properly and gather the fruit, without injury to the vines.

But to cultivate strawberries successfully, *irrigation* is indispensable. In Great Britain, where this delicious fruit is

* We are credibly informed that a gentleman in Dedham has raised about 4000 boxes of strawberries the present season; which, if sold at only 15 cents a box, would bring \$600—affording proof that the cultivation of this plant is well worth the attention of every one who can conveniently attend to it.—En.

raised in the greatest abundance and perfection, the climate is remarkably humid, and drought is rarely experienced ; still every precaution is taken to insure an ample supply of water to the plants. Various modes have been adopted to accomplish this with the greatest ease and certainty, as will be perceived by the following extract from Loudon's *Encyclopaedia of Gardening*.

‘**BRICK BEDS FOR STRAWBERRIES.** These were observed in a small garden near Chatham, and are thus described. The beds were upon flat ground, each about three feet wide, and between them were trenches about nine inches wide, and four inch walls of brick on each side of the trenches, to keep up the earth on the sides of the beds. These trenches were about the depth of two or three courses of bricks laid flat, without mortar, and were intended for the purpose of holding water, which was supplied from a pump, whenever the ground was dry, *while the plants were in fruit*. By this method, a much greater crop of fruit was obtained, and the plants continued bearing much longer than in beds where there were no trenches for water.

‘In Devonshire, strawberry beds are constructed against the side of a hill or bank, by building up beds in steps, with rough granite at the front, to keep up the earth, each step being about two feet high and three feet wide. These steps were filled with good loam, and the surface of each was covered with rough pieces of granite, bedded into the loam, leaving openings between the stones, just sufficient to put in the plants. The surface being covered with granite kept the ground longer in a moist state, and the fruit always clean.

‘I have found a great advantage in keeping the fruit clean, by laying a row of common bricks on each side of the rows of strawberry plants ; I tried plain tiles but found bricks answered better, as the tiles are apt to be broken in gathering the fruit.’

In this country we have almost a cloudless sky and fervent heat, while showers are very uncertain, and commonly not sufficiently copious, from the time strawberries commence blossoming until the period of their ripening has passed, and too often half or two-thirds of the crop is lost from the effects of drought. The plants suddenly wither, and the fruit is either not formed, or prematurely dried up or shrivelled.

If the beds were so situated that a shallow trench between the rows could be filled with water every evening, when rain

does not fall in sufficient quantity, the result would fully reward the care and extra labor of the cultivator.

A few years since I had six rows of strawberries which promised a great crop, until the fruit began to ripen, when the weather becoming hot and dry, there was great fear of the consequence. As they were at a considerable distance from the pump, all of them could not conveniently be watered, but as an experiment, two rows were bountifully supplied, every evening, until all the fruit was gathered, and they yielded nearly twice as much as the remaining four rows.

We have received most of our information on horticulture from England, and have introduced many of their modes of cultivation, without sufficiently considering the difference of climate. There they have frequent showers, or damp, cloudy weather, with but few clear, and seldom any hot days; while in this country we gradually suffer from excessive heat, and such as is never experienced in Great Britain. These artificial means are resorted to for obtaining the requisite heat to mature many garden vegetables and most of the fruits which ripen here in the open air. Here there is usually a superabundance of heat, and a lack of moisture, which must be supplied by art. We must imitate the cultivators of Portugal, Spain, France, Italy, Greece, Asia and Egypt, where irrigation is considered so indispensable that it has occasioned an adage as old as the histories of those countries, that '*There can be no garden without a fountain.*'

Damp, cold land will not answer for strawberries; it should be mellow and warm, but not elevated and dry, unless proper means are taken for complete irrigation.

Many of the writers on the cultivation of the strawberry recommend that the runners should be carefully cut off. It no doubt would tend to increase the size of the fruit if effectually done; but from an experiment made a few years since there did not appear to be such a favorable result as was anticipated. To produce the largest fruit from the most magnificent varieties, the runner should doubtless be eradicated.

THE SIPHONIA.

NATURAL ORDER—*Euphorbiaceae*, resembling the euphorbia in flowers and medicinal properties; cathartic, mild emetic. **CLASS**—*Monœcia*, having stamens and pistils on separate flowers on the same plant or house. **ORDER**—*Monadelphia*, having flowers with stamens united by their filaments in one set or brotherhood. **GENUS**—*Siphonia*, comprising siphoniee. **SPECIES**—*Elastica*, exuding an elastic gum. Staminate flowers—calyx, perianth scarcely manifest: corol 1-petalled, funnel-form; tube very short; border 5-perted; divisions, roundish; filaments, ten, oval-shaped. Pistillate flowers—calyx 0: coral 5-petalled, rosaceous: pistil, germ roundish, 3-furrowed; styles, three, bifid: stigmas, simple; perianth, capsule roundish; 3-celled: seeds solitary.

THIS tree is a native of Guiana, Quito and Brazil, particularly in Para, where it is called *Massaradub*, Madagascar, and many of the East India islands.

Abbé Rochon describes the tree which yields the elastic gum in Madagascar as twenty feet high, the leaves eight inches long and two inches broad, the fruit resembling a round fig and full of small seeds.

The first account which we have of the elastic gum or resin, or *caoutchouc*, as it is called by the Indians to the southeast of Quito, is in the memoirs of the French Academy for 1751, and in his relation of the river of Amazons in 1745. This tree grows along the banks of the Amazon, and is very common in the forests of the province of Emeralds to the north of Quito, where it is called *Hheve*, and whence Aublet has taken his generic name of this tree.

The tree is described as very lofty and straight, and quite naked up to the head, which is very small; the trunk of the largest is only about two feet in diameter. It is an evergreen not unlike that of the cassavi. The fruit is triangular, inclosing three seeds. These seeds or kernels, peeled and boiled in water, yield a thick oil, which the Indians use as butter with their food. The wood of this tree is light and suitable for masts for vessels.

This tree takes its generic name from *siphon*, a pipe used for the exudation of the Indian rubber.

From the account of Condamine, we learn that the substance called Indian rubber, caoutchouc, or gum elastic, oozes from this tree under the form of a vegetable milk, from inci-

sions made in the tree ; and that it is gathered chiefly in the time of rain, because, though it may be collected at all times, it flows then most abundantly. The means employed to inspissate and indurate it, M. de la Borde says, are kept a profound secret. M. Bonaparte, and others affirm that it thickens and hardens gradually by being exposed to the air ; and as soon as it acquires a solid consistence it manifests a very extraordinary degree of flexibility and elasticity. Accordingly the Indians make boots and hats of it which water cannot penetrate, and which when smoked have the appearance of real leather. Bottles are also made of it, to the necks of which are fastened hollow reeds, so that the liquor contained in them may be forced through the reeds or pipes by pressure. One of these filled with water is always presented to each of the guests at their entertainments, who never fail to make use of it before eating. Flambeaux, an inch and a half in diameter, and two feet long, are likewise made of this resin, which give a beautiful light, have no bad smell, and burn twelve hours. A kind of cloth is also prepared from it, which the inhabitants of Quito apply to the same purposes as our oil and sail cloth. It is formed, in fine, by means of moulds, into a variety of figures for use and ornament ; and the process is said to be as follows :—The juice, which is obtained by incision, is spread over pieces of clay formed into the desired shape ; and as fast as one layer is dry, another is added, till the vessel is of proper thickness ; the whole is then held over a strong smoke of vegetables on fire, whereby it hardens into the texture and appearance of leather ; and before the finishing, while soft, it is capable of having any impression made on the outside, which remains forever after. When the whole is done, the inside mould is picked out.

Among us, this gum is used by physicians for bandages and for injecting liquids ; by painters for rubbing out black lead pencil marks, &c. and is much worn in the winter season for over-shoes. It also makes an excellent varnish for covering balloons. Spirit of wine makes no impression on this substance, but it dissolves in ether and linseed oil, or in nut-oil, digested gently in a sand bath : there are also other oily substances which affect it very sensibly. It is said that the Chinese have been long acquainted with the art of dissolving it, and of giving it a variety of colors.

Various attempts have been made in Europe to discover some method of dissolving it in such a manner that it would assume different figures, with equal ease as when in its original

fluid state, but to no effect. Whatever is made of this substance must be done on the spot where it grows.

This substance chiefly exists in the *Siphonia elastica*; but it is likewise found in the juice of the *Excacaria agallocha*, *Hippomane Mancinella*, *Hura crepitans*, *Sapium aucuparium*, *Plukenetia volubilis*, the *Jathrophas*, *Mabea*, *Omphaleas*, *Asclepias** and many others.

THE GREAT-FLOWERING CEREUS.

NATURAL ORDER—*Opuntiaceae*, resembling the opuntia in flowers and medicinal properties; refrigerant, emollient, tonic. **CLASS**—*Icosandria*, having twenty stamens standing on the calyx. **ORDER**—*Mono-gynia*, having but one pistil. **GENUS**—*Cereus*, comprising cereuses. **SPECIES**—*Grandiflorus*, having large flowers. Calyx superior, many-cleft, imbricate: petals numerous, in many series, the inner ones larger: stigma many-cleft: berry 1-celled, many-seeded, umbilicate.

' Bright as the blush of rising morn she warms
The dull, cold eye of midnight with her charms;
There to the skies she lifts her pencilled brows,
Ope's her fair lips, and breathes her virgin vows;
Eyes the white zenith; counts the suns that roll
Their distant fires, and blaze around the pole;
Or mark where Jove directs his glittering car
O'er heaven's blue vault—herself a brighter star!
Sweet maid of night! to Cynthia's sober beams
Gloves thy warm cheek, thy polished bosom gleams,
In crowds around thee gaze th' admiring swains,
And guard in silence the enchanted plains;
Drop the still tear, or breathe th' impassioned sigh,
And drink inebriate rapture from thine eye.'

THIS stately flower is found in different parts of South America, and in some of the West India islands. It expands a most beautiful corolla of nearly a foot in diameter. When arrived to a sufficient strength it will produce many large, beautiful, sweet-scented flowers; sometimes six, eight or ten open at the same time on one plant, displaying a most magnificent appearance by candle-light. The inside of the calyx is a splendid yellow, or bright sulphur color; the petals of the purest white; but viewing it in front, so as to look into

* Mr. H. Eaton, assistant professor at Rensselaer Institution, N. Y. prepared a small quantity of the milk weed, (*Asclepias*) in such a manner that it could not be distinguished from the imported Indian rubber, either in external appearance, or in its properties.

its deep bell, whence issues its long trembling stamens, baffles all description; for in one shade, it is of an aurora color; viewed in another, it resembles the blaze of burning nitre; and as the eye plays over it, we think we see, at times, a bright reddish purple.

This plant takes its generic name from *cereus*, pliant, from the flexibility of the shoots of some of the species.

We may remark generally, that the most splendid flowers are of shortest duration: thus this grand flower expands its beautiful corolla, and diffuses a most fragrant odor, for a few hours in the night, then closes to expand no more. It commonly opens about seven or eight o'clock in the evening, usually in July in its native place, but later in England and in this country; by two in the morning it begins to wilt, and soon after to fade, droop and wither; and before sunrise it hangs down in a state of irrecoverable collapse and decay; and the next day this short-lived belle resembles a soaked half-grown ear of Indian corn.

'Now departs day's gairish light—
Beauteous flower, lift thy head!
Rise upon the brow of night!
Haste, thy transient lustre shed!

Night has dropped her dusky veil—
All vain thoughts be distant far,
While, with silent awe, we hail
Flora's radiant evening star.

See to life her beauties start;
Hail! thou glorious, matchless flower!
Much thou sayest to the heart,
In the solemn, fleeting hour.

Ere we have our homage paid,
Thou wilt bow thine head and die;
Thus our sweetest pleasure fade,
Thus our brightest blessings fly.

Sorrow's rugged stem, like thine,
Bears a flower thus purely bright;
Thus, when sunny hours decline,
Friendship sheds her cheering light.

Religion, too, that heavenly flower,
That joy of never-fading worth,
Waits, like thee, the darkest hour,
Then puts all her glories forth.

Then thy beauties are surpassed,
Splendid flower, that bloom'st to die;
For Friendship and Religion last,
When the morning beams on high.'

THE PASSION FLOWER.

NATURAL ORDER—*Cucurbitaceae*, resembling the gourd in fruit and medicinal properties, being cathartic and refrigerant. **CLASS**—*Monadelphia*, having stamens united by their filaments in one set or brotherhood. **ORDER**—*Pentandria*, having five stamens. **GENUS**—*Passiflora*, comprising passion flowers. Calyx 5-parted, colored: corol 5-petalled, on the calyx; nectary a triple crown within the petals: gourd-like berry, pedicelled.

—

'At rosy morn, or evenings's silent hour,
Some fair *Enthusiast* views the sainted flower,
When lo! to rapt imagination's eye,
Springs the sad scene of darkened Calvary!
The thorny crown the heavenly brows around,
The scourging thorns, the galling cords that bound
And nails that pierced with agonizing wound;
Sudden she lifts to heaven her ardent eye
In silent gaze and solemn ecstacy;
Then, filled with timid hope and holy fear,
Drops on a flower a consecrated tear.'

THIS superb genus of climbing plants, which is so profusely scattered over the globe, was unknown to Europe before the treasures of the western world were discovered by Columbus. Its ancient American name is *Murucuia*; but when first found by the Spaniards in South America, they called it *Granadilla*, from a resemblance they conceived the fruit to bear to that of the pomegranate, which is named *Granadilla* in Spanish.

When it was introduced into Italy, superstition found a mysterious representation of the passion of Christ in this flower; and the crafty, who are always ready to impose on the credulous, soon turned this vegetable prodigy to account. The plant was pronounced a miraculous emblem of the sufferings of the Son of God, and received the sanctimonious titles of—*Fior della Passione*, *Flos Passionis*, and *Christi Passionis Imago*. The leaf of the plant was expounded to be the spear which pierced the side; the twined thready substances of red and white, which form the crown of the flower, and which nature seems to have intended as a security for the nectar, were made to represent the lashes of the whip tinged with blood; the fine encircling stamens, the crown of thorns; the column in the centre of the flower, a miniature of that which served in the flagellation; the three clavate stigmas, the three nails used in the crucifixion.

To such a height was this ridiculous fantasy carried, that figures of this flower were manufactured for devotional purposes, instead of the presumptive symbol; and so well did the makers of these religious flowers understand their trade of deceit, that they substituted iron nails for the stigmas, and a wreath of real thorns for the thready rays of the flower.

Linné changed the name of this genus of plants from *Flos Passionis*, by combining the words into the technical name of *Passiflora*.

According to the *Hortus Britannicus* there are sixty-six known species of the passion flower, sixty of which are growing in the Linnaean Botanic Garden, New York, a few of which we now propose to describe.

THE FLESH COLORED PASSION FLOWER. *Passiflora incarnata*. This plant is a native of North America, and was the first variety known in Europe—introduced in the early part of the sixteenth century. It commonly grows to the height of thirty feet in its native place, putting forth in July and August pink or rose colored flowers. It is too tender to endure the open air of our climate, though it is sometimes planted in green houses for the sake of its fruit, which is of an egg shape, but more globular, varying in size from a pigeon's egg to that of a duck. When fully ripe, it is of a color between gray and a dingy Damascene, with a yellowish green pulp. The flavor is slightly aromatic, and thought to partake of that of both the melon and the strawberry.

THE COMMON OR BLUE PASSION FLOWER. *Passiflora cærulea*. This is a native of Brazil, and will thrive in the open air in this country, and is far more beautiful than the before-named species. It frequently sends out shoots of from ten to fifteen feet in one summer, and may be trained up more than forty feet high; and as it is the most elegant climber known, no pleasure-grounds should be without it, either to cover trellis-work or a wall. It loves a south aspect, and will sometimes flower when permitted to climb trees that stand sheltered in warm situations. In the Brazilian forests these beautiful plants climb to the height of sixty feet, forming festoons from tree to tree, from June to October, which are spangled with its white and blue flowers in the most superb manner.

THE RACEMOSE PASSION FLOWER. *Passiflora racemosa*. This is also a native of Brazil, and grows to a great height. The petals of this species are of a fine crimson, and the rays of the crown purple, springing from a ring of a dark puce, regularly spotted with white, that has the appearance of a circle of pearls. The converging crown that covers the nec-

tary is of a fine green. The corolla, before it expands, has the form of a balloon purse; and as the extremity of the branches hang loaded with the buds in a progressive state, it has a most lovely effect.

In its native country, it blossoms in November and December, producing generally two stems from the same stock, one of which proves fertile, and without leaves, while in that state; the other remains barren and in leaf, but becomes fertile in its turn in the succeeding year. The petals of these flowers are keel-shaped, and when fully expanded, each blossom measures from four to five inches in diameter, and it is perfectly without scent.

THE SQUARE-STALKED PASSION FLOWER. *Passiflora quadrangularis.* This is a native of the West Indies, and is the most magnificent of all the varieties yet known; and the flowers which are the largest, display in coloring the most delightful harmony with gayety that can be conceived; the whole resembling a well disposed mass of gems, including all the tints of amethyst, ruby, garnet, topaz, turquoise and emerald, sprinkled with jet and pearls. This fine flower requires artificial heat in our climate, but in the West Indies it is much cultivated as an ornamental climber for arbors and covered walks, for which its rapid growth, large foliage, and beautiful and fragrant bloom make it admirably adapted. It generally grows from twenty to thirty feet in height, blooming in August and September.

The common passion flower generally sends up numerous suckers, by which it is commonly increased. It may also be propagated by laying down the branches, which will be well rooted in one year, when they may be taken from the old plant, and placed where they are to remain. The cuttings will also take root, if taken in the spring before they begin to shoot, and planted in a loamy soil not too stiff. These require to be covered with hand-glasses until they put out shoots, when air must be admitted to them. But the plants raised by these means seldom produce much fruit; and therefore it is more desirable to cultivate them by seed, which should be sown in a good hot-bed in the spring; and when the plants are fit to remove, they should be planted in small pots, filled with good soil, and buried in a bed of tanners' bark. The following spring they may be turned out of the pots, and planted against a wall in a south aspect.

IRON.

CLASS—*Metallic*, comprising metals. GENUS—*Ferrum*, comprising iron.

If utility were made the standard of estimation, iron would hold the first place in the class of metals, and would be counted more valuable than gold, as it appears indispensably necessary to the carrying on of every manufacture. It appears to be one of the principal means of civilizing mankind. There has never been an instance of a nation acquainted with the art of manufacturing iron, which did not in time attain to a degree of civilization infinitely beyond the inhabitants of those countries where this metal was wanting, or its use unknown.

Iron is rarely found pure. It is most generally found in the state of an oxid or of a sulphuret; though it is found in the state of a carbonate, sulphate, phosphate, arseniate, chromate, muriate, &c. In the oldest primitive rocks it is generally found in the state of a protoxid, and is considerably magnetic. In secondary rocks and in alluvial deposits, it is often found in the state of a peroxid, and compounded with clay. In the more recent primitive formations, it is found in a mixed state, consisting of the protoxid and peroxid, in various proportions.

Iron, agreeably to the order of Providence, is the most extensively diffused. Its ores are found abundantly in all countries. It has been discovered more extensively in the northern than in the equatorial regions. The principal ores are the magnetic ore, and iron ore of mountainous regions; and the bog iron and iron earth of alluvial districts.

Great Britain and France contain the most extensive mines in the world. Sweden has large mines of magnetic ore, which produce the best of bar-iron. The mine of Danemora is particularly celebrated. At Gellivara, in Swedish Lapland, is a mountain of ore, three miles in length. Norway, Russia, Spain, Germany and Austria, have extensive iron mines also. The island of Elba contains one of the most ancient known, remarkable for the beautiful play of colors on the ore.

In the United States there are numerous and inexhaustible beds of iron ore, particularly along the Allegany or Appalachian mountains, from Franconia, in New Hampshire, to Georgia. Twelve mines are now open in Virginia. Kentucky, Tennessee and Ohio, also abound in iron. New York, New Jersey and Pennsylvania produce ore in abundance, of a qual-

ity not exceeded in Sweden. New Jersey, besides the iron-stone in the north, has extensive beds of bog ore on the coast, which are renewed in some years after they have been once exhausted. Similar beds occur in other parts of the alluvial coast, south of New Jersey; but they are not extensively wrought.

In Connecticut important mines are wrought at Salisbury, and at other places in Litchfield county. Massachusetts has a number of mines; and the Green Mountains of Vermont contain numerous beds of ore.

Iron is distinguished in the arts by three general kinds—*cast iron, wrought iron* and *steel*. Cast iron contains a proportion of carbon, and is of a brittle granulated structure. By melting cast iron and stirring it while in fusion, part of the carbon is burned out. Then by hammering or rolling, it becomes almost pure, fibrous and tough, and is then called wrought iron. After it is brought to the state of wrought iron, it may be converted into steel by heating in a confined place in contact with charcoal, with which it combines. It will then become hard on heating and plunging into cold water, and is more fusible.

Besides the cast iron and steel, iron enters into another state of combination with carbon, forming the plumbago or black lead, as it is called. This is considered as the true carburet of iron, consisting of 95 per cent. of carbon with 5 of iron, according to Allen and Pepys.

Iron becomes red hot by daylight at a temperature of 1077° F. above zero, and welding hot at 6508° ; cast iron becomes fusible at 8696° and soft wrought iron at $11,454^{\circ}$.

A small quantity of iron, united to oxygen in the vegetable substance, and acted upon by rays of light, is said to give rise to the various colors of plants.* If this theory is correct, the different shades of color in plants must be owing to the different proportions in which the iron and oxygen are combined.

To quote the words of a celebrated chemist—‘ When nature takes her pencil, iron is the coloring she always uses.’

Steel may be distinguished from iron by the action of an acid upon its carbon.

ILLUSTRATION. Let fall a drop of nitric acid upon a piece of polished iron, and another upon a piece of polished

* This idea coincides with the supposition, that the green color of leaves is changed to brown by the loss of an acid principle; that when the petals of flowers turn from purple to red, they have an increase of an acid. The base of this acid is oxygen.

steel. The acid on the iron will be limped or whitish, that on the steel will become dark brown or black.

APPLICATION. It is often very convenient to have a more ready method for distinguishing between iron and steel than the usual method of trying its hardening quality. It is not necessary to polish the iron or steel to make the trial. If a small spot on a coarse bar of iron or steel be filed bright it will be sufficient.

Iron becomes oxidated on exposure to air and water; and the red oxid, or iron rust, thus made, always contains some carbonate of iron in combination.

ILLUSTRATION. Collect some red iron rust and pour muriatic acid upon it, and carbonic acid will escape. Or heat it in a gun-barrel, as in obtaining oxygen from manganese, and carbonic acid may be collected.

APPLICATION. Iron rust, prepared by exposing very fine iron filings to water and air, is often used in medicine as a tonic.

Pure red oxid of iron may be obtained by driving out, with caloric, the reduced acid from a salt of iron.

ILLUSTRATION. Put some copperas (sulphate of iron) into an unglazed crucible, and heat it moderately until it becomes a dry white mass. Then put it into a crucible which will bear a high heat, and raise the heat until it becomes very red. Though copperas consists of the protoxid of iron and sulphuric acid, we obtain the peroxid. For a part of the sulphuric acid is decomposed, and thereby furnishes another proportion of oxygen to the iron.

APPLICATION. Here the iron is left in the state of a per-oxid, after the sulphuric acid is driven off in the state of gas. Sulphuric acid was at first obtained by heating copperas in earthen retorts, and bringing over most of the acid. Copperas being called green vitriol, this acid was called vitriolic acid, and by some, the oil of vitriol, on account of its flowing like oil.

Sulphate of iron (copperas) is formed by the chemical combination of iron and sulphuric acid.

ILLUSTRATION. Put diluted sulphuric acid into a Florence flask, consisting of about five times as much water as acid. Apply a very little heat, so as rather to warm than heat the acid. Drop in iron filings until they will fall to the bottom quietly. Pour off the clear liquid into earthen plates. This is copperas in solution; and by a slow evaporation it may be crystallized.

APPLICATION. On this principle the copperas of commerce is manufactured; but the process is very different. Iron pyrites are moistened and exposed to the atmosphere a considerable time in a shallow vat or box. After it becomes covered with a crust it is dissolved in water, or leached and evaporated.

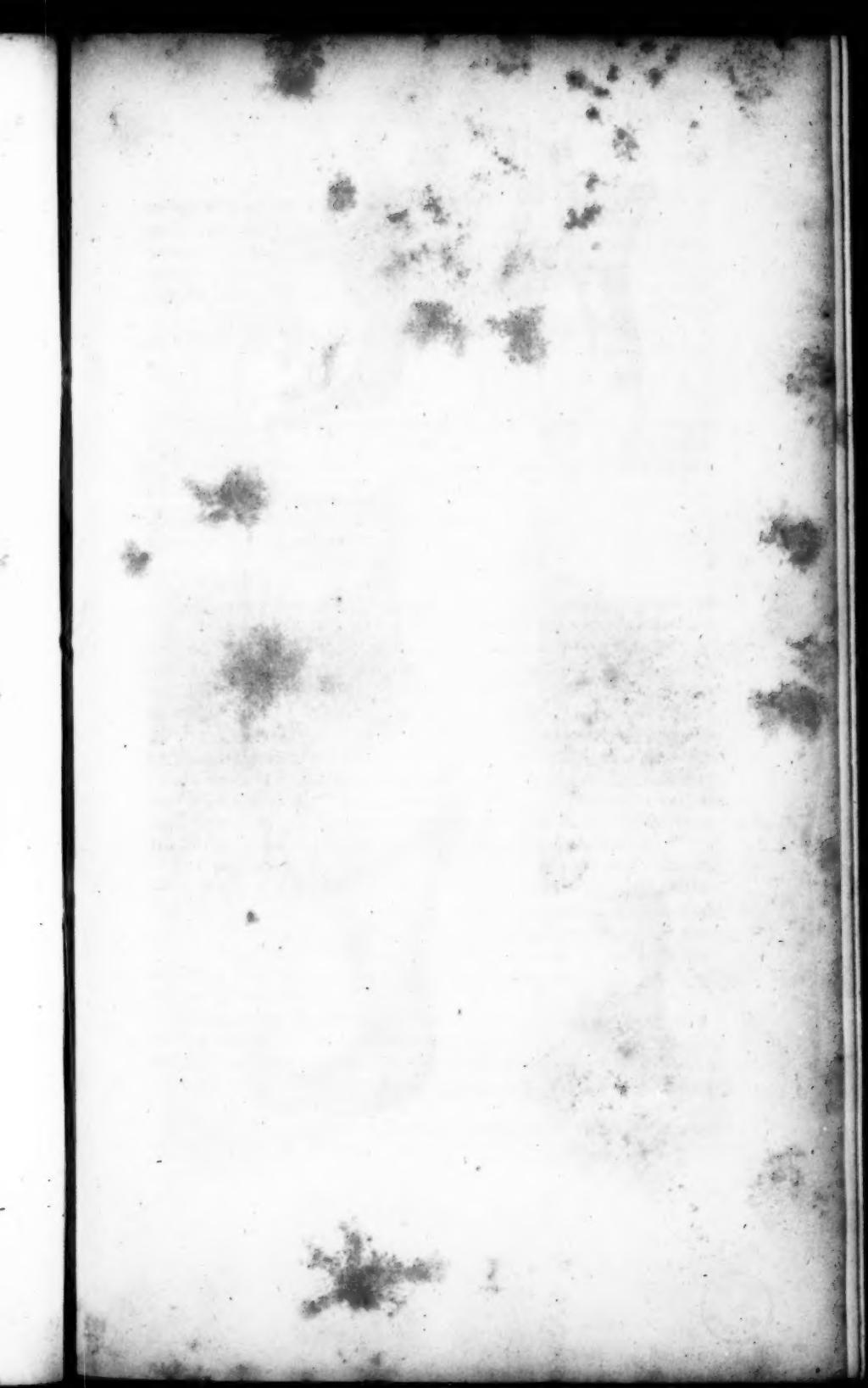
Iron will combine directly with sulphur by the agency of caloric, and form sulphuret of iron.

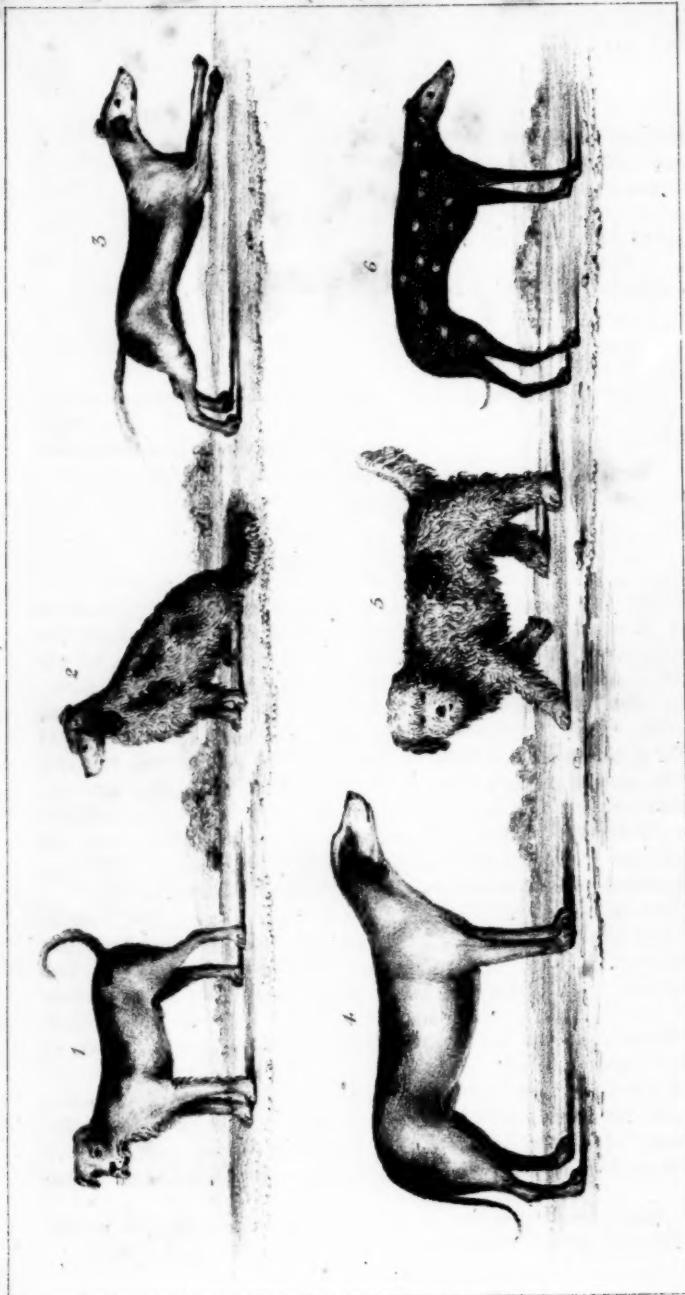
ILLUSTRATION. Heat the end of a bar of iron almost to a white heat. Apply the hot end to a common roll of brimstone. The iron and sulphur will unite and form iron pyrites. A small roll of brimstone has been made to preforate a large bar of iron, when highly heated.

APPLICATION. Vast quantities of sulphuret of iron are found in the earth; but these substances seem to be more perfectly united than they can be by art. The native sulphuret is rarely used for composing sulphuretted hydrogen.

Sulphur and iron, when in combination, seem to be strongly predisposed to combine with oxygen. On this principle the oxygen is taken from an inclosed portion of atmospheric air, as directed under nitrogen. Artificial volcanoes may be produced by ramming with force into a large pot, a paste made of 100 pounds of iron filings, intimately mixed with 100 pounds of pulverized sulphur, and just water enough to make a dense paste. This pot is then buried to a considerable depth in the earth, and between ten and twenty hours afterwards, it bursts out and burns with great force. It is said that no effect can be produced without a very large quantity of the mixture.

Though iron is mineralized with sulphur, oxygen and carbonic acid, it does not enter into many alloys. The principal alloy of iron known in the arts, is that of the sheet tin.





Paulsen's Lithog. 3 B. 1911

